Guidelines for Vaccinating Pregnant Women

from
Recommendations of the Advisory Committee on Immunization Practices (ACIP)

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Disease Control & Prevention

CDC
Centers for Disease Control and Prevention

GUIDELINES FOR VACCINATING PREGNANT WOMEN

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Vaccination of Pregnant Women

"Risk from vaccination during pregnancy is largely theoretical. The benefit of vaccination among pregnant women usually outweighs the potential risk when a) the risk for disease exposure is high, b) infection would pose a special risk to the mother or fetus, and c) the vaccine is unlikely to cause harm." ACIP *General Recommendations on Immunization,* p. 20

Generally, live-virus vaccines are contraindicated for pregnant women because of the theoretical risk of transmission of the vaccine virus to the fetus. If a live-virus vaccine is inadvertently given to a pregnant woman, or if a woman becomes pregnant within 3 months after vaccination, she should be counseled about the potential effects on the fetus. But it is not ordinarily an indication to terminate the pregnancy.

Whether live or inactivated vaccines are used, vaccination of pregnant women should be considered on the basis of risks vs. benefits – i.e., the risk of the vaccination vs. the benefits of protection in a particular circumstance. The following table may be used as a general guide.

	VACCINE	SHOULD BE CONSIDERED IF OTHERWISE INDICATED	CONTRAINDICATED DURING PREGNANCY	SPECIAL OR ABSENT RECOMMENDATION (SEE TEXT)
ROUTINE	Hepatitis A			(See page 1)
	Hepatitis B	✔		
	Influenza	✔		
	Measles*		✔	
	Mumps*		✔	
	Pneumococcal			(See page 3)
	Polio (OPV* & IPV)			(See page 3)
	Rubella*		✔	
	Tetanus/Diphtheria	✔		
	Varicella*		✔	
TRAVEL & OTHER	BCG*		✔	
	Cholera			(See page 6)
	Japanese Encephalitis			(See page 7)
	Meningococcal	✔		
	Plague			(See page 7)
	Rabies	✔		
	Typhoid (Parenteral & Ty21a*)			(See page 8)
	Vaccinia*		✔	
	Yellow Fever*			(See page 8)

*Live, attenuated vaccine.

Passive Immunization during Pregnancy

"There is no known risk to the fetus from passive immunization of pregnant women with immune globulin preparations." ACIP *General Recommendations on Immunization,* p. 21

On the following pages, relevant passages from ACIP recommendations are reprinted for each vaccine. Material in quotation marks is taken verbatim from ACIP (emphasis in **bold type** added); material not in quotation marks is paraphrased.

Guidelines for Vaccinating Pregnant Women

Abstracted from recommendations of the Advisory Committee on Immunization Practices (ACIP)

HEPATITIS A

- "The safety of hepatitis A vaccination during pregnancy has not been determined; however, because hepatitis A vaccine is produced from inactivated [hepatitis A virus], the theoretical risk to the developing fetus is expected to be low. **The risk associated with vaccination should be weighed against the risk for hepatitis A in women who may be at high risk for exposure to [hepatitis A virus].**"[1]

HEPATITIS B

- "On the basis of limited experience, there is no apparent risk of adverse effects to developing fetuses when hepatitis B vaccine is administered to pregnant women (CDC, unpublished data). The vaccine contains noninfectious HBsAg particles and should cause no risk to the fetus. [Hepatitis B virus] infection affecting a pregnant woman may result in severe disease for the mother and chronic infection for the newborn. **Therefore, neither pregnancy nor lactation should be considered a contraindication to vaccination of women**."[2]

- "Hepatitis B vaccine is recommended for women at risk for hepatitis B infection . . ."[3]

INFLUENZA

- "On the basis of . . . data that suggest that influenza infection may cause increased morbidity in women during the second and third trimesters of pregnancy, the [ACIP] recommends that **women who will be beyond the first trimester of pregnancy (≥14 weeks' gestation) during the influenza season be vaccinated.**"[4]

- "**Pregnant women who have medical conditions that increase their risk for complications from influenza should be vaccinated before the influenza season—regardless of the state of pregnancy.**"[4]

- "Studies of influenza immunization of more than 2,000 pregnant women have demonstrated no adverse fetal effects associated with influenza vaccine; however, more data are needed."[4]

MEASLES

- "**MMR and its component vaccines should not be administered to women known to be pregnant**. Because a risk to the fetus from administration of these live virus vaccines cannot be excluded for theoretical reasons, women should be counseled to avoid becoming pregnant for 30 days after vaccination with measles or mumps containing vaccines and for 3 months after administration of MMR or other rubella-containing vaccines."[5]

- "If a pregnant woman is vaccinated or if she becomes pregnant within 3 months after vaccination, she should be counseled about the theoretical basis of concern for the fetus, but MMR vaccination during pregnancy should not ordinarily be a reason to consider termination of pregnancy."[5]

MUMPS

- "**MMR and its component vaccines should not be administered to women known to be pregnant**. Because a risk to the fetus from administration of these live virus vaccines cannot be excluded for theoretical reasons, women should be counseled to avoid becoming pregnant for 30 days after vaccination with measles or mumps containing vaccines and for 3 months after administration of MMR or other rubella-containing vaccines."[5]

- "If a pregnant woman is vaccinated or if she becomes pregnant within 3 months after vaccination, she should be counseled about the theoretical basis of concern for the fetus, but MMR vaccination during pregnancy should not ordinarily be a reason to consider termination of pregnancy."[5]

PNEUMOCOCCAL

- "The safety of pneumococcal polysaccharide vaccine during the first trimester of pregnancy has not been evaluated, although no adverse consequences have been reported among newborns whose mothers were inadvertently vaccinated during pregnancy."[6]

POLIO

- "Although no adverse effects of OPV or IPV have been documented among pregnant women or their fetuses, **vaccination of pregnant women should be avoided**. However, if a pregnant woman requires immediate protection against poliomyelitis, she may be administered OPV or IPV in accordance with the recommended schedules for adults."[7]

- "**MMR and its component vaccines should not be administered to women known to be pregnant**. Because a risk to the fetus from administration of these live virus vaccines cannot be excluded for theoretical reasons, women should be counseled to avoid becoming pregnant for 30 days after vaccination with measles or mumps containing vaccines and for 3 months after administration of MMR or other rubella-containing vaccines."[5]

- "If a pregnant woman is vaccinated or if she becomes pregnant within 3 months after vaccination, she should be counseled about the theoretical basis of concern for the fetus, but MMR vaccination during pregnancy should not ordinarily be a reason to consider termination of pregnancy."[5]

- "Rubella-susceptible women who are not vaccinated because they state they are or may be pregnant should be counseled about the potential risk for CRS and the importance of being vaccinated as soon as they are no longer pregnant."[5]

- A registry of susceptible women vaccinated with rubella vaccine between 3 months before and 3 months after conception – the "Vaccine in Pregnancy (VIP) Registry" – was kept between 1971 and 1989. No evidence of CRS occurred in the offspring of the 226 women who received the current RA 27/3 rubella vaccine and continued their pregnancy to term.[5]

TETANUS & DIPHTHERIA

- "**Combined tetanus and diphtheria toxoids are . . . routinely indicated for susceptible pregnant women.** Previously vaccinated pregnant women who have not received a Td vaccination within the last 10 years should receive a booster dose."[8]

- "Pregnant women who are unimmunized or only partially immunized against tetanus should complete the primary series."[8]

- "Although no evidence exists that tetanus and diphtheria toxoids are teratogenic, waiting until the second trimester of pregnancy to administer Td is a reasonable precaution for minimizing any concern about the theoretical possibility of such reactions."[9]

VARICELLA

- "The effects of the varicella virus vaccine on the fetus are unknown; therefore, **pregnant women should not be vaccinated**. Nonpregnant women who are vaccinated should avoid becoming pregnant for 1 month following each injection. For susceptible persons, having a pregnant household member is not a contraindication to vaccination."[10]
- "If a pregnant woman is vaccinated or becomes pregnant within 1 month of vaccination, she should be counseled about potential effects on the fetus."[10]
- "Because the virulence of the attenuated virus used in the vaccine is less than that of the wild-type virus, the risk to the fetus, if any, should be even lower."[10]
- "In most circumstances, the decision to terminate a pregnancy should not be based on whether vaccine was administered during pregnancy."[10]
- "VZIG [Varicella Zoster Immune Globulin] should be strongly considered for susceptible, pregnant women who have been exposed."[10]
- The manufacturer & CDC have established a VARIVAX® Pregnancy Registry to monitor outcomes of women who got the vaccine 3 months before or any time during pregnancy. Call **1-800-986-8999**.

BCG

- "Although no harmful effects to the fetus have been associated with BCG vaccine, **its use is not recommended during pregnancy**."[11]

CHOLERA

- "No specific information exists on the safety of cholera vaccine during pregnancy. Its use should be individualized to reflect actual need."[12]

JAPANESE ENCEPHALITIS

- "No specific information is available on the safety of JE vaccine in pregnancy. Vaccination poses an unknown but theoretical risk to the developing fetus, and **the vaccine should not be routinely administered during pregnancy.**"[13]

- "Pregnant women who must travel to an area where risk of JE is high should be vaccinated when the theoretical risks of immunization are outweighed by the risk of infection to the mother and developing fetus."[13]

MENINGOCOCCAL

- Studies have shown the vaccine to be both safe and efficacious when given to pregnant women. While high antibody levels were found in umbilical cord blood following vaccination during pregnancy, antibody levels in the infants decreased during the first few months after birth. Subsequent response to meningococcal vaccination was not affected.

- "Based on data from studies involving use of meningococcal vaccines administered during pregnancy, **altering meningococcal vaccination recommendations during pregnancy is unnecessary**."[14]

PLAGUE

- "The effects of plague vaccine on the developing fetus . . . are unknown. Pregnant women who cannot avoid high-risk situations should be advised of risk-reduction practices and **should be vaccinated only if the potential benefits of vaccination outweigh potential risks to the fetus**."[15]

RABIES

- "Because of the potential consequences of inadequately treated rabies exposure, and because there is no indication that fetal abnormalities have been associated with rabies vaccination, **pregnancy is not considered a contraindication to postexposure prophylaxis**."[16]

- "**If there is substantial risk of exposure to rabies, preexposure prophylaxis may also be indicated during pregnancy**."[16]

TYPHOID

- "No data have been reported on the use of any of the three typhoid vaccines among pregnant women."[17]

VACCINIA

- "**Vaccinia should not be administered to pregnant women**."[18]
- "On rare occasions, almost always after primary vaccination, vaccinia virus has been reported to cause fetal infection. . . . Vaccinia vaccine is not known to cause congenital malformations."[18]

YELLOW FEVER

- "Although specific information is not available concerning adverse effects of yellow fever vaccine on the developing fetus, **pregnant women theoretically should not be vaccinated**, and travel to areas where yellow fever is present should be postponed until after delivery."[19]
- "If international travel requirements constitute the only reason to vaccinate a pregnant woman, rather than an increased risk of infection, efforts should be made to obtain a waiver letter from the traveler's physician."[19]
- "**Pregnant women who must travel to areas where the risk of yellow fever is high should be vaccinated**. Under these circumstances, for both mother and fetus, the small theoretical risk from vaccination is far outweighed by the risk of yellow fever infection."[19]

1. Centers for Disease Control & Prevention. Prevention of Hepatitis A Through Active or Passive Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 45 (No. RR-15): 20, 1996.

2. Centers for Disease Control & Prevention. Hepatitis B Virus: A Comprehensive Strategy for Eliminating Transmission in the United States Through Universal Childhood Vaccination: Recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 40 (No. RR-13): 4, 1991.

3.Centers for Disease Control & Prevention. General Recommendations on Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 43 (No. RR-1): 21, 1994.

4. Centers for Disease Control & Prevention. Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 47 (No. RR-6): 6, 1998.

5. Centers for Disease Control & Prevention. Measles, Mumps, and Rubella — Vaccine Use and Strategies for Elimination of Measles, Rubella, and Congenital Rubella Syndrome and Control of Mumps: Recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 47 (No. RR-8): 32-33, 1998.

6. Centers for Disease Control & Prevention. Prevention of Pneumococcal Disease: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 46 (No. RR-8): 6, 1997.

7. Centers for Disease Control & Prevention. Poliomyelitis Prevention in the United States: Introduction of a Sequential Vaccination Schedule of Inactivated Poliovirus Vaccine Followed by Oral Poliovirus Vaccine: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 46 (No. RR-3): 18, 1997.

8. Centers for Disease Control & Prevention. General Recommendations on Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 43 (No. RR-1): 20-21, 1994.

9. Centers for Disease Control & Prevention. Diphtheria, Tetanus, and Pertussis: Recommendations for Vaccine Use and Other Preventive Measures: Recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 40 (No. RR-10): 14, 1991.

10. Centers for Disease Control & Prevention. Prevention of Varicella: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 45 (No. RR-11): 19, 1996.

11. Centers for Disease Control & Prevention. The Role of BCG Vaccine in the Prevention and Control of Tuberculosis in the United States: A Joint Statement by the Advisory Council for the Elimination of Tuberculosis and the Advisory Committee on Immunization Practices. MMWR 45 (No. RR-4): 13, 1996.

12. Centers for Disease Control & Prevention. Cholera Vaccine: Recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 37 (No. 40): 2, 1988.

13. Centers for Disease Control & Prevention. Inactivated Japanese Encephalitis Vaccine: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 42 (No. RR-1): 12-13, 1993.

14. Centers for Disease Control & Prevention. Control and Prevention of Meningococcal Disease and Control and Prevention of Serogroup C Meningococcal Disease: Evaluation and Management of Suspected Outbreaks: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 46 (No. RR-5): 5, 1997.

15. Centers for Disease Control & Prevention. Prevention of Plague: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 45 (No. RR-14): 10, 1996.

16. Centers for Disease Control & Prevention. Rabies Prevention–United States, 1991: Recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 40 (No. RR-3): 11-12, 1991.

17. Centers for Disease Control & Prevention. Typhoid Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 43 (No. RR-14): 7, 1994.

18. Centers for Disease Control & Prevention. Vaccinia (Smallpox) Vaccine: Recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 40 (No. RR-14): 6, 1991.

19. Centers for Disease Control & Prevention. Yellow Fever Vaccine: Recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 39 (No. RR-6): 3, 1990.

Prenatal Screening for Vaccine-Preventable Diseases

The ACIP currently recommends prenatal screening for rubella and hepatitis B:

"Prenatal serologic screening . . . is indicated for all pregnant women who lack acceptable evidence of rubella immunity. Upon completion or termination of their pregnancies, women who do not have serologic evidence of rubella immunity or documentation of rubella vaccination should be vaccinated with MMR before discharge from the hospital, birthing center, or abortion clinic." ACIP, *Measles, Mumps, and Rubella — Vaccine Use and Strategies for Elimination of Measles, Rubella, and Congenital Rubella Syndrome and Control of Mumps*, p. 18.

"All pregnant women should be routinely tested for HBsAg during an early prenatal visit in each pregnancy. . . . HBsAg-positive mothers identified during screening may have HBV-related acute or chronic liver disease and should be evaluated by their physicians." ACIP, *Protection Against Viral Hepatitis*, p. 14.

Vaccinating Women who are Breastfeeding

"Neither killed nor live vaccines affect the safety of breast-feeding for mothers or infants. Breast-feeding does not adversely affect immunization and is not a contraindication for any vaccine." ACIP, *General Recommendations on Immunization*, p. 20.

The following applies to varicella vaccine, which was licensed after the ACIP General Recommendations were published: "Whether attenuated vaccine VZV is excreted in human milk and, if so, whether the infant could be infected are not known. Most live vaccines have not been demonstrated to be secreted in breast milk. Attenuated rubella vaccine virus has been detected in breast milk but has produced only asymptomatic infection in the nursing infant. Therefore, varicella vaccine may be considered for a nursing mother." ACIP, *Prevention of Varicella*, pp. 19-20.

For More Information

More detailed information about vaccination of pregnant women can be found in:

ACIP statements for specific diseases.

The ACIP's ***Update on Adult Immunization*** (MMWR Vol. 40, No. RR-12, November 15, 1991). See especially p.9 and Appendix 5, pp.82-88.

Current ACIP recommendations can be found on the National Immunization Program's website at <http://www.cdc.gov/nip>. Or call the National Immunization Program's Information Center at (404) 639-8226.

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The American College of Physicians' ***Guide for Adult Immunization***, Third Edition, pp. 25-29. Customer Service for the American College of Physicians can be contacted at (215) 351-2600 or (800) 523-1546.